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# RECREATING THE SCENE: AN EFFECTIVE WAY TO PROVIDE DELAYED PUNISHMENT FOR INAPPROPRIATE MOTOR BEHAVIOR

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A mediated punishment procedure that involved recreating a behavioral sequence by guiding the subject through the behavior in the situation in which it occurred was used to suppress several severe problem behaviors in two developmentally delayed children. The mediational procedure was first used with a 4-year-old autistic boy for biting and then for foot stomping. Next the procedure was used for stealing and hoarding behavior with a multiply handicapped 17-year-old girl. Results indicated that the procedure was effective and produced relatively rapid results. One advantage of the procedure is that it provides an opportunity for trained personnel to apply restrictive procedures to low frequency behavior that occurs in their absence rather than relying on less qualified staff to implement the procedure immediately after the behavior occurs.

DESCRIPTORS: delayed punishment, recreating the scene, movement suppression, developmentally disabled children, autistic children

The treatment of serious behavior problems sometimes requires the use of relatively restrictive punishment procedures (Foxx & Azrin, 1972; Foxx, McMorrow, Bittle, & Bechtel, 1986; Rolider & Van Houten, 1985a). Whenever the use of such procedures is required it is essential that those implementing them are professionals experienced in behavior analysis as well as in the correct application of the procedures (Foxx, Plaska, & Bittle, 1986).

Unfortunately, some severe behavior problems occur relatively infrequently, thereby making it difficult or impractical for the professional to wait for the behavior to occur in his or her presence so that he or she can apply consequences or directly supervise the staff in applying the consequences. In these cases mediational procedures may be necessary to render delayed consequences maximally effective. Rolider and Van Houten (1985b) used a small hand-held tape recorder to play back samples of severe tantrum behavior to facilitate the application of a delayed punishment procedure with psychotic and severely developmentally delayed children. Although this procedure was highly effective, it is not practical in instances in which the behavior does not have a major auditory component.

For behaviors that occur in the absence of qualified behavior management personnel and for behaviors that are often undetected until long after their emission (e.g., stealing), management of the behavior by the immediate application of punishment may be precluded. In these cases, it may be possible to simulate the behavior by guiding the person through the behavior in the same situation in which it occurred and then immediately applying consequences. By recreating the scene in this manner, punishment is associated with the stimuli involved in carrying out the behavior. The purpose of the present experiment was to determine whether a mediational procedure that involved recreating the scene followed by punishment could effectively reduce low frequency behaviors as well as behaviors that are difficult to detect directly.

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## METHOD

### *Subjects*

The participants in this experiment were a 4-year-old developmentally delayed boy and a 17-year-old developmentally delayed girl. The boy, Shawn, was diagnosed as autistic at the age of 3 years. At the start of the experiment, stereotypic and tantrum behavior rarely occurred; Shawn regularly played with toys, could follow a few simple directions, and had acquired some functional speech, such as the carrier "May I have—" to request several items. However, Shawn still engaged in aggressive behavior in the form of biting other children and stomping on the feet of other children and adults. Although biting occurred only once or twice per day its intensity was so severe that he required constant staff supervision and was in jeopardy of being dismissed from his preschool.

The second participant, Karen, was totally blind and developmentally delayed. Karen had an IQ of 70 (WISC-R), good receptive and expressive language, and could read Braille. Karen lived in an institutional setting because she had engaged in compulsive stealing and hoarding since the age of 7 years. Karen stole small items such as cookies, cans of soda, necklaces, and audiotape cassettes from the residential living area and hid them in several locations. Karen was rarely caught in the act of stealing.

### *Recording Procedures and Settings*

Shawn's biting behavior was measured in the preschool setting; his foot-stomping behavior was measured in the home setting. Shawn attended the preschool from 8:30 a.m. to 1:00 p.m., Monday through Friday, where he engaged in free play and planned supervised activities with 12 to 16 other children. Usually three or four staff members were present during these activities.

### *Biting*

Biting was defined as any contact between Shawn's teeth and another child's anatomy. Staff members made every effort to prevent Shawn from biting other children throughout the experiment. Each time Shawn bit another child, a staff member and an aide independently recorded the time of the incident. Because Shawn's biting always produced a reaction in the child who was bitten and usually left marks, the time recorded by the two observers was always in perfect agreement. Because biting occurred only in the preschool setting it was recorded only in that setting.

### *Foot Stomping*

Foot-stomping behavior was defined as the placement of Shawn's shoe on another person's shoe. In almost all cases this behavior had a weight-bearing component. This behavior was measured during a 20-min recording session conducted in the living room of Shawn's home between 2:00 and 2:30 p.m., Monday through Friday. Present at these times were one or two research assistants, Shawn's mother, and his older brother, aged 7.

Foot stomping was measured by the research assistant who recorded the exact time of each incident. During two baseline sessions and four treatment sessions, a second research assistant independently recorded the occurrence and time of foot stomping. An agreement was scored whenever the time recorded by each observer did not differ by more than 1 min. Interobserver agreement on the occurrence of foot stomping was computed by dividing the number of times both observers agreed the behavior occurred at a particular time by the number of times they agreed it occurred at a particular time plus the number of times they disagreed. Interobserver agreement averaged 94% and ranged from 83% to 100%. Because foot stomping occurred in both the home and preschool setting it was also recorded by staff in the preschool setting. However, no measure of interobserver agreement was systematically collected in this setting for this behavior. One- and 4-month follow-up data on foot stomping and biting were collected in the same manner as described above.

### *Stealing*

Karen's stealing and hoarding were measured using a permanent product recording procedure. Karen was typically in the residence at least 7 wak-

ing hours per day, during which time a staff member checked her room every 30 min to determine whether and how many items she had hoarded. The staff member used a checklist to ensure that no possible locations were missed and that a constant number of hiding locations were examined during each check. On 3 days during each condition of the experiment a second staff member independently checked Karen's room. Both observers were always in complete agreement on the number of stolen items in Karen's room. To keep the opportunity for stealing relatively constant, 10 items were placed each day at known sites from which Karen frequently stole things. Each of these sites was also checked prior to checking Karen's room to determine whether any of the planted items were missing. Any planted item that disappeared was always found in one of the areas Karen used to hoard stolen items. Because the contract to work with Karen's food stealing and hoarding behavior ran out shortly after the end of the experiment, no follow-up data were collected.

*Experimental Design*

A multiple baseline across subjects and behaviors design was used in this experiment. Following the baseline condition a recreate-the-scene plus punishment condition was introduced first for Shawn's biting behavior, then for Shawn's foot-stomping behavior, and finally for Karen's stealing behavior.

*Baseline condition.* When Shawn's biting behavior was brought to the attention of the first author it was judged to be sufficiently dangerous to the other children to warrant the immediate implementation of a procedure to reduce the frequency of biting instead of establishing a "no-intervention" baseline. Instructions to staff to closely monitor Shawn's behavior and to intervene as soon as they saw any attempt to bite proved ineffective because Shawn often responded rapidly and without warning. Therefore the following procedures were introduced in an attempt to control Shawn's biting; they constitute the baseline conditions for this experiment. First, staff were instructed to assign one person to watch Shawn and to stop him whenever they thought he was going to bite another child; second, a behavior management program was introduced. The behavior management program involved praising Shawn for playing with his toys approximately every 15 min and giving him a firm descriptive reprimand ("Don't bite" or "Don't stomp on feet") that involved eye contact, firmly grasping his shoulders, and a loud firm tone of voice whenever he bit another child or stomped on another child or a staff member's foot. In addition, Shawn was placed in chair time-out for 2 min following the reprimand; any attempt to leave the chair was reprimanded and Shawn was firmly returned to the chair.

Karen received praise when no stolen items were found in her room following a check, and a strong descriptive reprimand ("You don't steal food") that involved firmly grasping the shoulder and a firm loud tone of voice whenever stolen items were found in her room.

*Recreate-the-scene plus punishment for biting.* One day before the introduction of this condition the first author met separately with the preschool staff and Shawn's parents. During this meeting he reviewed the results of the procedure in effect during the baseline condition and outlined the recreate-the-scene plus movement-suppression time-out procedure, recommending that it be tried for several days to see if it could be effective. The procedure was then demonstrated. The parents consented, and the preschool staff agreed to participate. Following the one biting incident that occurred during this condition, approval from the mother of the boy who had been bitten was sought and attained before carrying out the treatment procedure. The biting incident was recreated in the recreation area where it had occurred. All children were moved to other areas of the preschool except Shawn and the child he had bitten. The recreate-the-scene procedure was explained to the child who had been bitten. (This child was not developmentally delayed.) The child was then seated on the floor in the same place he had been when he was bitten and instructed to cry when Shawn's face came close to his cheek. Next the experimenter firmly grasped Shawn's head with a palm on each cheek to ensure complete control and thereby preclude the possibility of Shawn biting

the child again. Shawn's head was guided toward the child's cheek and his teeth were exposed by gently pulling back his lips. As Shawn's teeth came within several inches of the boy's face, Shawn received a loud reprimand in the form of "Don't bite" while the experimenter placed a pointed finger in front of his face. Shawn was then quickly taken to the nearest corner in the play area and a 1-min movement-suppression time-out procedure was applied (Rolider & Van Houten, 1985a). The movement-suppression time-out procedure involved positioning Shawn with his chin against the corner, both hands crossed behind his back with the palms of both hands visible, and his feet close together touching the wall. Whenever Shawn moved or spoke, the experimenter said "don't move" or "don't talk" in a loud, firm tone of voice while pressing the child into the corner by placing one hand against the child's upper back. This procedure was applied even if the child moved only a small amount (e.g., wiggling a finger or shifting weight from one leg to the other). At the end of the minute Shawn was released from the corner and the entire recreate-the-scene procedure was repeated twice more.

*Recreate-the-scene plus punishment for foot stomping.* During this intervention phase the experimenter hid in another room until an instance of foot-stomping behavior occurred. He then applied the recreate-the-scene consequence three times (including movement-suppression time-out) as described in the previous condition, except that Shawn's foot was guided and brought down over the person's foot he had stomped.

*Recreate-the-scene plus punishment for food stealing and hoarding.* Whenever stolen items were found during a check, the theft was recreated by replanting the stolen item and returning Karen to the scene of the theft. This was possible because stolen items always included at least one of the planted items. The recreate-the-scene procedure was carried out in the same manner as described for Shawn with two exceptions: the corner was padded to ensure the safety of the procedure because of Karen's larger size, and the second author administered the procedure.

## RESULTS

Results of this experiment are presented in Figure 1. During the baseline condition the frequency of Shawn's biting behavior varied from one to three incidents per day and the frequency of his foot-stomping behavior varied from four to seven times per session. The number of items that Karen stole per day varied from 17 to 32.

Following the first implementation of the recreate-the-scene plus punishment procedure Shawn discontinued his biting behavior. However, the procedure had to be applied twice during the first session of the treatment for foot stomping and twice on one more occasion 3 days later before foot stomping was completely eliminated. The intervention was applied on four separate occasions for Karen before 4 days of stealing-free behavior were observed.

Follow-up data indicated that Shawn did not bite or stomp on others' feet during the 1- and 4-month period following the application of the treatment. Indeed, the staff at the preschool and Shawn's parents reported that they had not observed biting in the 9 months that followed the application of the treatment procedure. Although formal data were not collected on foot stomping at the preschool, the intervention was also applied once in this setting on the day following its second application in the home. After that application the preschool staff reported that they did not observe any further incidence of foot stomping at the preschool.

Although formal follow-up data were not obtained for Karen, the administrative staff reported that her stealing behavior seemed to remain at a lower level than that observed during the baseline condition.

## DISCUSSION

Results of this study demonstrate that recreating the scene plus punishment may be an effective way to provide delayed consequences for severe undesirable behavior. One advantage offered by this approach is that it allows a therapist to apply punishment procedures directly; the therapist does not

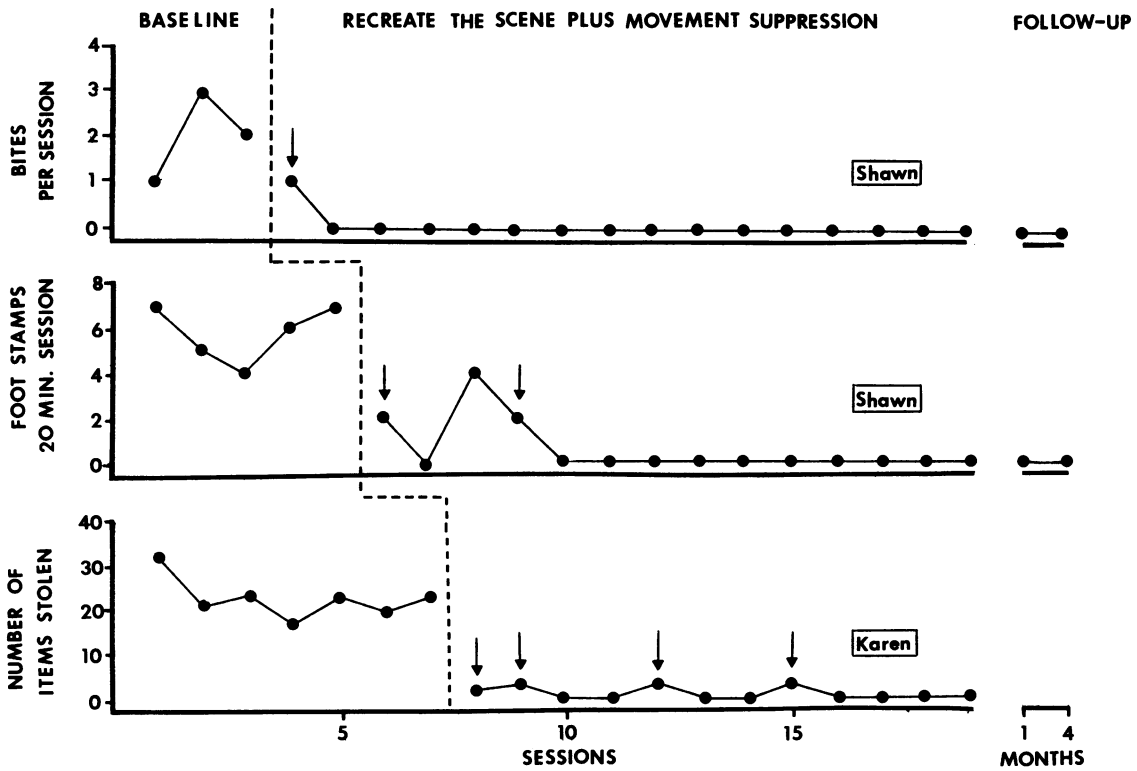


Figure 1. The number of times Shawn bit another child or stomped on someone's foot, and the number of items Karen stole during each session of the experiment. The arrows indicate sessions during which the movement-suppression time-out procedure was applied.

have to rely on staff members who may not be trained to apply aversive procedures in a reliable and safe manner. Another advantage offered by the recreate-the-scene procedure is that it can be used to mediate punishment for behaviors (e.g., stealing and hoarding) that are not easily detected and that thus preclude the timely delivery of punitive consequences.

A third advantage of this procedure is the rapid results that it produced. In the case of Shawn's biting, the procedure was applied only three times following one incident of biting to suppress this dangerous behavior. In the case of foot stomping, response suppression was achieved after two sessions, whereas for stealing, four sessions were required to attain response suppression. One factor that may contribute to the efficacy of this procedure might be the application of the consequence several times following each instance of the behavior by recreating the scene. Future research should examine whether the procedure is more effective when it was applied once or several times following the target behavior.

It should be noted that the recreate-the-scene plus movement-suppression procedure can be quite intrusive. Therefore it should only be implemented after less intrusive interventions have been tried first and determined to be ineffective or impractical, or when the implementation of less intrusive interventions is contraindicated because a severe problem behavior poses a risk to the subject or to others if less effective interventions are applied first. In addition, practitioners must take adequate precautions to prevent injuries, emotional distress, or both whenever recreating potentially dangerous scenes.

Although the recreate-the-scene plus punishment procedure was effective in reducing the frequency of serious behavior, it is possible that the delayed application of the movement-suppression time-out procedure would have been effective with-

out recreating the scene. However, the literature on delayed punishment (Azrin, 1956) suggests this possibility is quite unlikely.

Finally, these results should be viewed cautiously because of the small number of subjects involved. Future research should be conducted to extend the generality by attempting to replicate the experiment with additional subjects.

## REFERENCES

Azrin, N. H. (1956). Effects of two intermittent schedules of immediate and non-immediate punishment. *Journal of Psychology,* **42,** 3–21.

Foxx, R. M., & Azrin, N. H. (1972). Restitution: A method of eliminating aggressive-disruptive behavior of retarded and brain damaged patients. *Behavior Research and Therapy,* **10,** 15–27.

Foxx, R. M., McMorrow, M. J., Bittle, R. G., & Bechtel, D. R. (1986). The successful treatment of a dually-diagnosed deaf man's aggression with a program that included contingent electric shock. *Behavior Therapy,* **17,** 170–186.

Foxx, R. M., Plaska, T. G., & Bittle, R. G. (1986). Guidelines for the use of contingent electric shock to treat aberrant behavior. In M. Hersen, R. M. Eisler, & P. M. Miller (Eds.), *Progress in behavior modification* (pp. 1–34). New York: Academic Press.

Rolider, A., & Van Houten, R. (1985a). Movement suppression time-out for undesirable behavior in psychotic and severely developmentally delayed children. *Journal of Applied Behavior Analysis,* **18,** 275–288.

Rolider, A., & Van Houten, R. (1985b). Suppressing tantrum behavior in public places through the use of delayed punishment mediated by audio recording. *Behavior Therapy,* **16,** 181–194.

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